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Codinaea jianfenglingensis sp. nov. and new records from southern China

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Abstract — *Codinaea jianfenglingensis* is described and illustrated from specimens collected on dead branches in Hainan Province. The new fungus is characterized by distinct conidiophores and single apical monophialidic conidiogenous cells that produce fusiform to lunate conidia with a single unbranched setula at each end. *Craspedodidymum hyalosporum* and *Ellisembiopsis brasiliensis* are newly recorded from China.

Key words — conidial fungi, taxonomy

Introduction

During our ongoing survey of microfungi associated with woody debris in tropical and subtropical forests of Hainan and Guangdong provinces, three species with morphological characteristics of the genera *Codinaea* Maire, *Craspedodidymum* Hol.-Jech., and *Ellisembiopsis* T.S. Santa Izabel & Gusmão (Maire 1937, Holubová-Jechová 1972, Santa Izabel et al. 2013) were collected on decaying twigs and dead stems. One of these is an undescribed species of *Codinaea*, while the other two species are new records for China. The specimens are deposited in the Herbarium of Department of Plant Pathology, Shandong Agricultural University, Taian, China (HSAUP) and the Mycological Herbarium, Institute of Microbiology, Chinese Academy of Sciences, Beijing, China (HMAS).

Codinaea jianfenglingensis J.W. Xia & X.G. Zhang, **sp. nov.** Fig. 1

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Differs from *Dictyochaeta caatingae*, *D. macrospora*, *D. matsushimae*, and *D. triseptata* by its monophialidic conidiogenous cells that produce fusiform to lunate conidia with a filiform setula at each end.

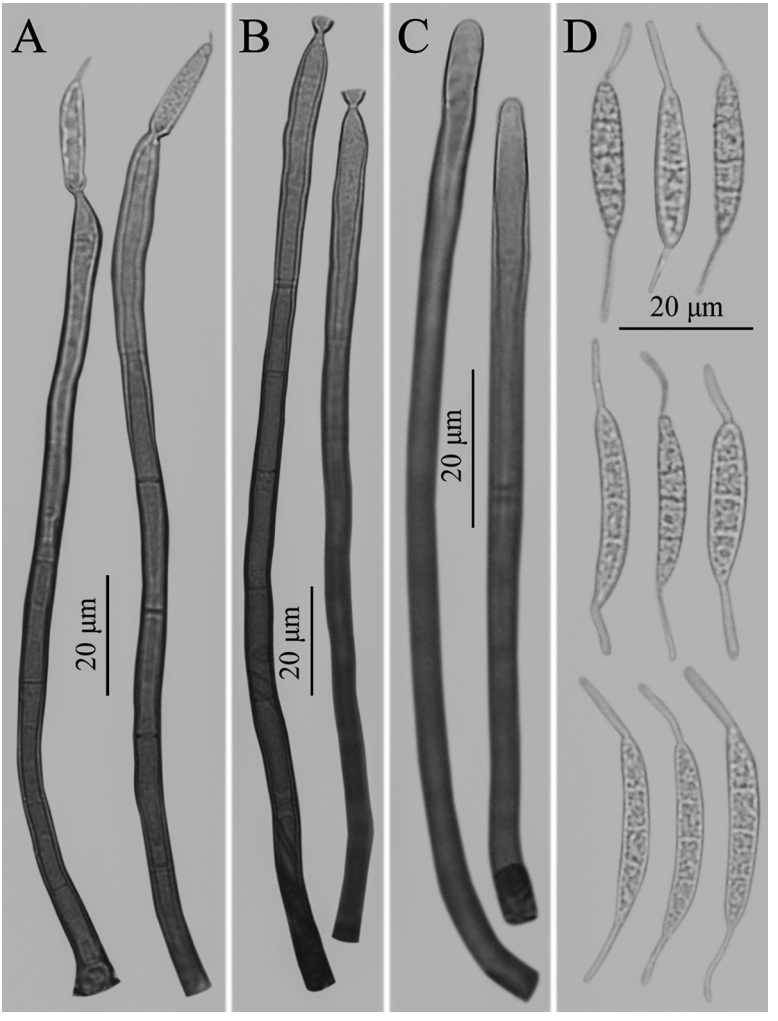

Fig. 1. *Codinaea jianfenglingensis* (ex holotype, HSAUP H6456): A. Conidiophores, conidiogenous cells, and conidia. B. Conidiophores and conidiogenous cells with collarettes. C. Setae. D. Conidia.

Type: China, Hainan Province: Jianfengling, on dead stems of unidentified broadleaf tree, 22 Apr. 2014, J.W. Xia (**Holotype**, HSAUP H6456; **isotype**, HMAS 245589).

Etymology: in reference to the type locality.

Colonies on natural substrate effuse, brown, hairy. Mycelium partly superficial, partly immersed in the substratum, composed of septate, pale brown, smooth hyphae, 1–2 µm wide. Setae solitary, erect, straight or flexuous, 3–5-septate,

smooth, brown, 100–130 × 3.4–4.5 μm. Conidiophores distinct, single, erect, straight or slightly flexuous, cylindrical, smooth, thick-walled, brown, 4–7-septate, 120–200 × 4.5–5 μm. Conidiogenous cells monophialidic, integrated, cylindrical, subhyaline to pale brown, 28–50 × 4.5–5 μm; collarette, 3.5–4.5 × 2.5–3.5 μm. Conidia fusiform to lunate, 3-septate, smooth, subhyaline, 22–30 × 4–6 μm, with a filiform setula, 7.5–11.5 μm long, at each end.

Comments – The genus *Codinaea* was proposed by Maire (1937), with *C. aristata* Maire as the type species. Gamundi et al. (1977) rediscovered and redescribed *Dictyochaeta fuegiana* Speg., the type species of *Dictyochaeta* (Spegazzini 1923) and proposed *Codinaea* as a synonym. However, molecular studies by Réblová & Winka (2000) suggest that species with setulate conidia (*Codinaea*) are distinct from those lacking conidial setulae (*Dictyochaeta*). Seifert et al. (2011) and Li et al. (2012) supported segregation of *Codinaea* and *Dictyochaeta* as separate genera delineated by the presence/absence of conidial setulae.

Codinaea jianfenglingensis is morphologically similar to *Dictyochaeta caatingae* A.C. Cruz & Gusmão, *D. macrospora* Kuthub. & Nawawi, *D. matsushimae* (Hewings & J.L. Crane) Whitton et al., and *D. triseptata* (Matsush.) R.F. Castañeda in having 3-septate conidia. However, *D. caatingae, D. macrospora, D. matsushimae,* and *D. triseptata* can be easily separated by their polyphialidic conidiogenous cells. (Castañeda-Ruiz 1986, Kuthubutheen & Nawawi 1991, Whitton et al. 2000, Cruz et al. 2008).

Craspedodidymum hyalosporum Bhat & W.B. Kendr., Mycotaxon 49: 35, 1993. Fig. 2

Colonies on natural substrate effuse, dark brown to black, hairy. Mycelium partly superficial, partly immersed in the substratum. Conidiophores distinct, single, erect, straight or slightly flexuous, smooth, thick-walled, brown to dark brown, unbranched, often percurrently regenerating at cut ends, 8–12-septate, 150–270 × 5.5–8 μm. Conidiogenous cells terminal, integrated, monophialidic, pale brown, 25–38 × 5–6 μm, with a prominent, thin-walled, cup-shaped and flared collarette. Conidia pale brown, ellipsoidal to cylindrical, rounded at both ends, smooth, 0–1-septate, slightly constricted at the septum, 6.5–11 × 3.5–5 μm, accumulating in colourless slimy masses at the conidiophore apex.

Specimen examined: **CHINA**, **Guangdong Province**: Baiyun Mountain, on dead stems of unidentified broadleaf tree, 28 May 2013, J.W. Xia (HSAUP H6358, HMAS 245590).

Comments – The genus *Craspedodidymum* was erected by Holubová-Jechová (1972) with *C. elatum* Hol.-Jech. as the type species. It is characterized by distinct, single, unbranched, or branched conidiophores bearing integrated,

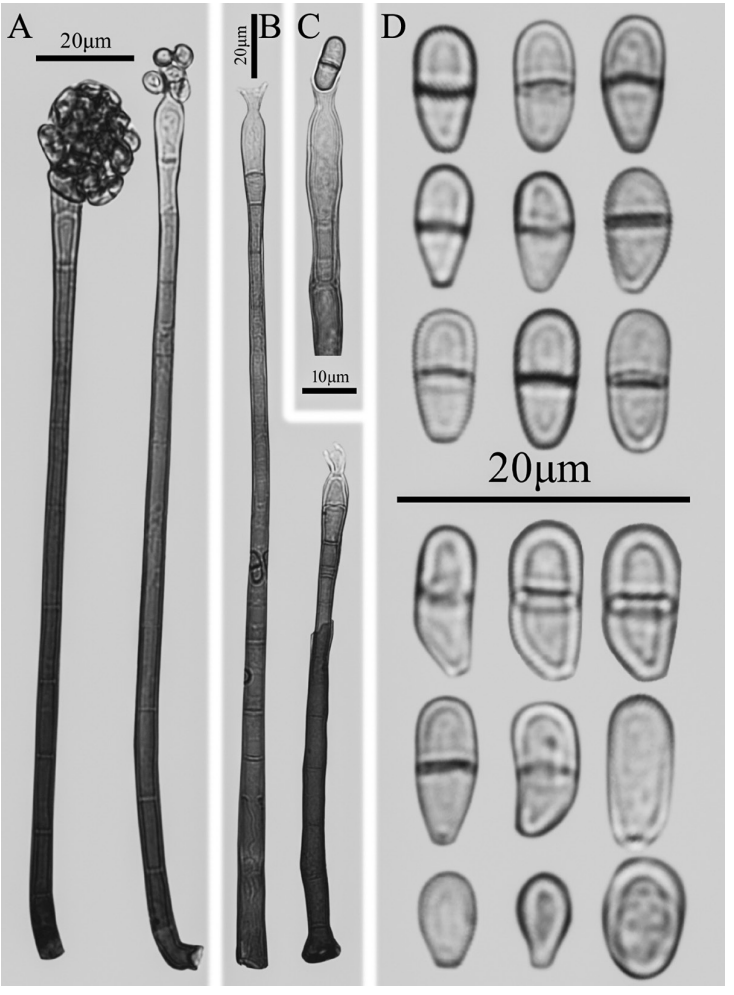

Fig. 2. *Craspedodidymum hyalosporum* (ex HSAUP H6358): A. Conidiophores, conidiogenous cells, and conidia. B. Conidiophores and conidiogenous cells. C. Conidiogenous cell with collarette and conidium. D. Conidia.

terminal, monophialidic, cylindrical, apically swollen conidiogenous cells with a large and distinct funnel-shaped terminal collarette (Holubová-Jechová 1972, Ellis 1976, Yanna et al. 2000).

Craspedodidymum hyalosporum is reported for the first time from China. The Chinese specimen is similar to the protologue description, with almost the same conidial size as the Indian type collection (8–12.5 × 4–6 μm; Bhat & Kendrick 1993).

Ellisembiopsis brasiliensis T.S. Santa Izabel & Gusmão, Mycosphere 4: 158, 2013. Fig. 3

Colonies on natural substrate effuse, brown to dark brown. Mycelium partly superficial, partly immersed in the substratum, composed of subhyaline, septate, branched, smooth hyphae, 1.5–2.5 µm wide. Conidiophores distinct, single, erect, straight or flexuous, branched at the apical region, 7–9-septate,

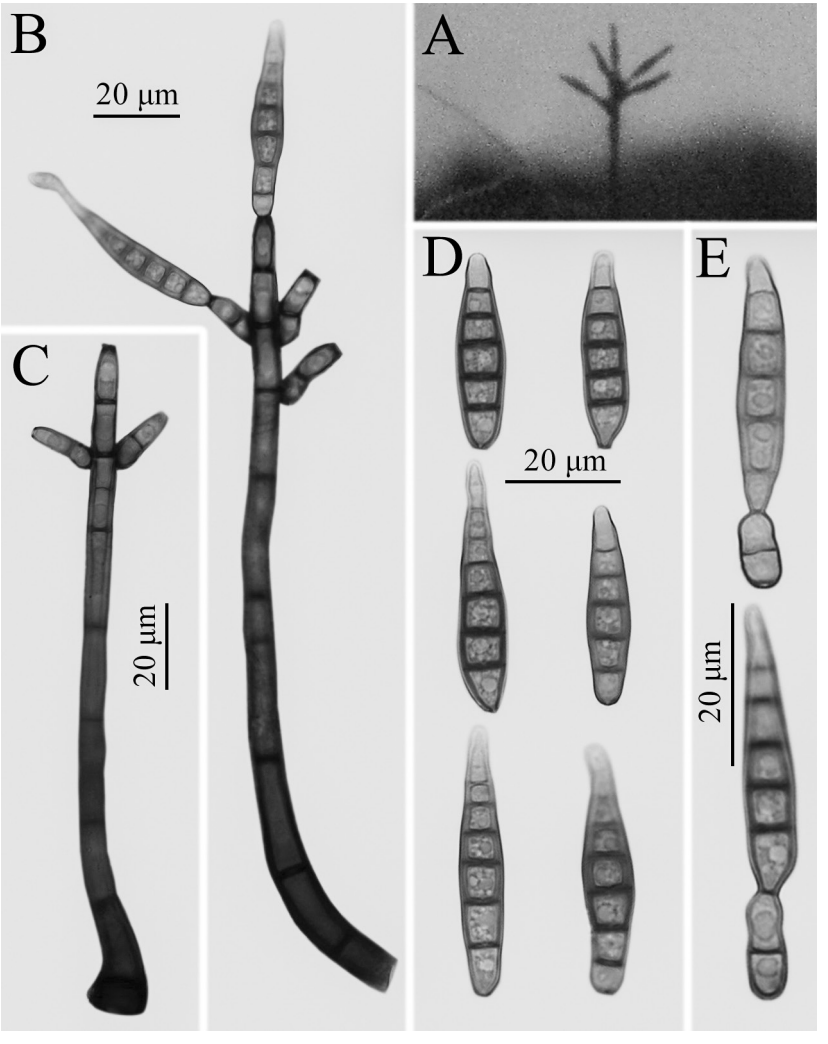

Fig. 3. *Ellisembiopsis brasiliensis* (ex HSAUP H6442): A. Colonies on natural substratum. B. Conidiophore, conidiogenous cells, and conidia. C. Conidiophore and conidiogenous cells. D. Conidia. E. Conidiogenous cells and conidia.

smooth, brown to dark brown, 150–200 × 5.5–6.5 µm. Conidiogenous cells monoblastic, integrated, lageniform to doliiform, 12–14 × 4.5–5.5 µm. Conidial secession schizolytic. Conidia solitary, obclavate to fusiform, 5–6-distoseptate, smooth, brown, 30–50 × 7.5–8.5 µm.

Specimen examined: **CHINA**, **Hainan Province**: Jianfengling, on dead stems of unidentified broadleaf tree, 28 May 2013, J.W. Xia (HSAUP H6442, HMAS 245591).

Comments – There are only two accepted taxa of *Ellisembiopsis*, *E. brasiliensis* and *E. zhejiangensis* (Wongs. et al.) T.S. Santa Izabel & Gusmão. *Ellisembiopsis brasiliensis* is reported for the first time from China. The Chinese specimen is similar to the protologue description, with the Brazilian type collection having somewhat larger conidia (35–80 × 7.5–13.5 µm; Santa Izabel et al. 2013).

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